OTIS (F. N.)

ON

REFLEX IRRITATIONS

THROUGHOUT THE

GENITO-URINARY TRACT,

RESULTING FROM

CONTRACTION OF THE URETHRA AT OR NEAR THE MEATUS URINARIUS,

CONGENITAL OR ACQUIRED.

BY

FESSENDEN N. OTIS, M.D.,

CLINICAL PROFESSOR OF GENITO-URINARY DISEASES IN THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK.

READ BEFORE THE NEW YORK ACADEMY OF MEDICINE,
Thursday, February 19th, 1874.

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Mr. President and Fellows of the Academy :

The influence of the irritation of peripheral nerves in producing centric disturbance in the spinal cord, which may thence be transmitted to distant parts of the animal economy, (first claimed by Dr. Marshall Hall, more than twenty years ago), has found corroboration in the testimony of every medical scientist since his time ; and besides, so much clinical proof has been accumulated, by the medical profession at large, in support of this proposition, that it is no longer a matter for discussion. Morbid reflex disturbances are now accepted as occupying an important place in the recital of human suffering.

Varied and grave disturbances influencing the entire nervous system, are often ascertained to be dependent upon as apparently insignificant a cause as a decayed tooth, an indigestion, a simple erosion upon the cervix uteri, ceasing at once on the cessation of the cause. Dr. D. Campbell Black, of Glasgow, in his very interesting and valuable work on the renal and urinary organs, cites cases of retention of urine from reflex irritation, the result of an operation for hœmorrhoids. Trousseau has recorded cases of incontinence of urine dependent solely upon the irritation caused by a preputial contraction. Dr. Sigismund Waterman, of New York, has shown me a case of this sort which was promptly relieved by division of the prepuce. I have seen other similar cases, and also one marked case of *retention* of urine in an infant nine months old, which, after lasting

four days, was completely relieved within one hour by slitting up the prepuce. Seminal emissions are well known to occur as a result of phymosis, relief occurring promptly on ablation of the prepuce.

Dittel relates a case where a man twenty-six years of age had a slight phymosis, and was the subject of incomplete erections, nocturnal emissions, frequent desire to urinate, and also of many hypochondriac symptoms, all of which were promptly and completely cured by removal of the prepuce.

A similar case is related by Pitha. Sweigger-Seidel cites a case where the simple introduction of a catheter caused complete syncope, and yet no urethral disease was present. I have the record of a similar case where complete unconsciousness instantly followed the introduction of a bulbous sound through the meatus urinarius. Every surgeon of much experience has recognized the tendency to syncope in a considerable proportion of nervous patients, on the first introduction of instruments through the meatus.

Spasm of the bladder is noted by Dr. D. C. Black as occurring from sympathetic irritation, and to such a degree that complete closure of the *uretral* orifices results, producing retention of urine in the ureters and pelves of the kidney. Such a case I believe I have seen resulting in death from uræmia, and caused by the rude introduction, by the patient, of a catheter, through a narrow stricture at the posterior border of the fossa navicularis ; forcible and painful contraction of the bladder followed immediately, with complete suppression of urine ; the patient died uræmic twenty-four hours after. The bladder was found empty (with the exception of a few drams of grumous blood and mucous), closely contracted and free from disease. The ureters were normal, the kidneys highly engorged with blood, but presenting no evidence of disease. The case was accepted as one of *acute suppression* at the time. The ureters are known to contract vigorously under the influence of the galvanic current. The above case,* it now seems to me, was

*Reported to the N. Y. Pathological Society, March, 1872.

one of spasm of the ureters and bladder, reflected from the irritation of the end of the penis.

A few days since Dr. Brown-Sequard related to me the following case :

"While in London, during the past year, a gentleman was brought to me who presented all the rational signs of advanced cerebral *ramollissement.* I had looked upon the case as quite a hopeless one, until noticing that the patient frequently applied his hand, in an absent sort of way, to his genital apparatus. Permission being accorded, examination of the parts revealed an aggravated inflammatory phymosis, complicated with acute balanitis. "On making this discovery," said Dr. Brown-Sequard, "I expressed to the medical gentleman accompanying and in charge of the patient, my belief of the possibility that the *apparent* ramollissement might be due to reflex irritation, caused by the evidently chronic and severe irritation of the glans penis. I advised complete division or ablation of the prepuce, and treatment of the balanitis, as the best and only hope for the patient's recovery from the brain trouble from which he was suffering."

The operation was performed, and the effect upon the mental and physical condition of the patient was almost immediate. "So rapid was his recovery," said Dr. Brown-Sequard, "that within six weeks from the date of the operation he presented himself at my office, perfectly well in every respect."

Dr. Sayre, of New York, in the Transactions of the American Medical Association for 1870, has reported several interesting cases of partial paralysis of the lower extremities associated and evidently dependent upon adherent and contracted prepuce. One was of a boy five years of age, unable to walk without assistance or to stand erect—his knees being flexed at an angle of forty-five degrees. The operation of circumcision was performed on this lad by Dr. Sayre, and "from the very day of the operation the child began to improve," and without other treatment made a rapid and complete recovery. In a second case, a lad of fourteen years had been under treatment for paralysis of his legs for several months without marked im-

provement, when it was found that a contracted and adherent prepuce was present, causing great local irritation, dysuria, and painful erections. The preputial contraction was recognized as a possible important factor in causing the paralytic trouble. Circumcision was performed, resulting in complete recovery from the paralysis in six weeks.

Sir Henry Thompson says* : "I have given complete relief to distressing symptoms of very long continuance, *the cause of which was not suspected*, by dividing an external meatus, which, nevertheless, admitted a No. 6 English catheter. I have met" (he farther states) "with three marked examples of a similar kind, in which the very simple operation necessary, was followed by *complete disappearance of urinary difficulties, which had been long regarded as of an extremely obscure character.*"† He cites a single case : "J. J., aged thirty-four, a gentleman whom I had visited at the request of his medical attendant, in the Spring of 1857, had been suffering from painful, prolonged and frequent micturition for five years previous. He was compelled to pass water from three to five times every night, and every two hours during the day ; experienced severe pains in the back and loins, and general ill health. Urine was purulent, fœtid, alkaline; results of habitual retention and partial engorgement of the bladder. He had been treated for renal disease without any good effect. On examination I found a simple narrowing of the urethral orifice, and marks of previous ulceration in a small cicatrix. I learned" says he, "that he had had chancre seven years before, which involved a large portion of the meatus, after the healing of which, his present symptoms almost imperceptibly appeared. A probe only passed through the narrow opening. I divided the contraction so as to make a free opening. A No. 10 catheter was passed easily into the bladder, demonstrating that there was no other obstruction, and twelve ounces of urine were drawn off, although he had passed water just before. The relief was almost instantaneous,

*Stricture of the Urethra, Second Ed., page 249.
†Page 253, opp. cit.

in a week it was complete. He has had perfect immunity from his urinary complaints ever since."

By the cases already cited, and many others scattered through the periodical literature of the past few years, it is sufficiently proved that paresis, more or less pronounced, may result from irritations reflected through peripheral nerves, without any coincident morbid change in the structure of the spinal cord, and that incontinence of urine, retention of urine, suppression of urine, involuntary seminal emissions, may, in the same manner, result from irritation at the *extremity of the glans penis.* The case of simulated cerebral *ramollissement*, related by Brown-Sequard, occurring as a direct sequence of like irritation, indicates the wide range of sympathetic disturbances which my be initiated by simple inflammatory action at this point. Now, aside from the fact that the glans penis is known to be extraordinarily rich in sympathetic nerve cells ; that it is the recognized initial point from which the physiological sexual excitement is transmitted throughout the male genitalia, the records of clinical experience abound with evidences of the capacity and proneness of this especial region to produce reflex disturbances, often of a grave and lasting character, throughout the entire sympathetic nervous system. Notwithstanding these facts, I believe that the full significance of this locality as a source of reflex irritations along the genito-urinary tract has not yet been appreciated; and further, I am convinced that many heretofore obscure difficulties and diseases of the genito-urinary organs may be distinctly traced to the locality of the meatus urinarius as the source of their initiation and continuance. In pursuance of this idea, permit me, gentlemen, to present for your consideration the following cases :

Case 1.—A. Y., physician, aged twenty-eight, contracted first gonorrhœa November 20th, 1873. Severe, lasted four weeks; treatment by alkalies, internally, continued application of cold, mild injections. Was under my care. I noticed on examination, that his penis was large and the meatus small, and called patient's attention to this fact when he first pre-

sented for advice, and assured him if he did not have a fair recovery it would be necessary to enlarge the meatus. Jan. 19th, patient presents with gleety discharge without known cause, great irritation at the neck of the bladder, and frequent desire to urinate ; is certain that his former disease was imperfectly cured, and that it has come forward from the deep urethra to which it had extended in his original clap. I reminded him of his contracted meatus; he is certain he needs deep injections, but submits to operation for enlargement of meatus. Cut it to 30*f*, after which, 30*f* bulb passes throughout the canal with ease : to keep the incision open until healing is complete.

24th, patient reports immediate cessation of irritation in the perineal portion of the urethra, on division of the contraction. The discharge ceased within forty-eight hours, and he has had no trouble since.

Case 2.—September 10th, 1872, Mr. W., a Swede silk weaver, was brought to me by his medical attendant, complaining of pain and general discomfort about the perineum, and especially of a nervous uneasiness in that region, and in the glans penis, which prevented him from pursuing his avocation. He could not sit still ; had had a gonorrhœa several years previous. Had been treated for stricture by dilatation for several months, but without relief. Examination showed a narrow meatus, No. 20*f*. Stricture at 2½ inches, defined by 18*f*. A free division of the meatus was made with Civiale's *bistourie cache* and of the stricture with the dilating urethrotome ; 27*f* passed readily through ; to be kept open by daily introduction of sound until healed. 20th, patient reports entire cessation of the irritation and nervous feeling immediately following the operation, but this returned yesterday. Examination shows recontraction of the meatus to 20. Cut again freely.

November 16th, patient again called, with the statement that he had been able to work until the day previous, when the irritation had again returned, and he desired to be cut again. Examination showed a recontraction at the meatus to 24. Cut again, and introduced 30*f*, which passed easily through the site of stricture at 2½ inches, and down to the bulbo-membran-

ous junction. This patient called two months after, (Jan. 20th), and had had no return of his trouble—no recontraction of meatus.

Case 3.—Mr. W., aged twenty-seven, had gonorrhœa in 1870, lasting one month, when a fresh exposure resulted in another attack, which lasted, under a sharp fire of injections, for six months longer. Since that time has always had a return of the discharge after connection. Has been under treatment for stricture by several physicians, but none succeeded in entering the bladder. His last medical attendant, after treating him for a couple of months, said that he had no instruments small enough to pass, and advised him to put himself under my care. Examination, April 16th, showed organs unusually well developed, meatus contracted to 24*f*, and red and pouting, and bathed in a muco-purulent discharge. Twenty-four sound is arrested at five inches; only fine filiform will pass, and that is closely hugged. April 19th, pass filiform with ease, follow with No. 10, and then with some effort with No. 16*f*; after this the filiform is again closely hugged in the membranous portion; divided the meatus freely, and introduced No. 30 steel sound, which passed literally by its own weight down through into the bladder, thus proving not only the spasmodic character of the deep obstruction in this case, but its entire dependence upon irritation caused by the stricture at the meatus.

Case 4.—October 30th, 1873. J. W., aged thirty-two, had gonorrhœa ten years ago very severely, lasting with pain and difficulty of micturition fully six months. After being apparently well for three years, a gleety discharge appeared without new exposure. Masturbated daily from fourteen years of age to twenty, when he abandoned the habit. At twenty-six began to have nocturnal emissions, which, growing gradually more frequent since the last two years, have occurred almost nightly. He has had occasional sexual intercourse. Erections have been imperfect for last eighteen months, ejaculation taking place before the erection was complete. He has suffered much from despondency and nervousness. Has had

no treatment except for general health, which much of the time has been indifferent. Examination shows genitals well developed and apparently normal, with the exception that while the circumference of the flaccid penis is three inches, and the meatus is contracted to 22*f*. (the size of urethra in a penis three inches in circumference is, as a rule, fully 30*f*.*) See note.

Nov. 1st. Divided meatus thoroughly, and passed 31 bulbous sound readily through contraction.

Nov. 11th. Has had no emission since date of operation.

Dec. 1st. Found himself getting so much better in spirits and feelings generally, that he ventured to marry on the 25th. Since that time has had no trouble of any sort. *Considers himself a well man.*

Case 5. Mr. W., aged twenty-five, came under my care Dec. 1st, 1872. Contracted first gonorrhœa early in June, 1872. Was treated by the use of injections locally and alkalies internally until August 1st, during which time he had no freedom from the discharge nor from acute suffering. About this time the vesical neck became involved, and he suffered much from frequent painful micturition. Came then under the care of a skilled endoscopist, who discovered numerous spots of granulations in the course of the canal, extending quite into the prostatic portion, and applications of a strong solution of nitrate of silver were made through the endoscope, which gave temporary relief; urination still painful every hour.

By September 1st, after the use of pencils of tannin and glycerine, discharge decreased to a slight mucous. A spell of damp weather brought back the purulent discharge, with return of perineal pain and frequency of micturition. Tannin pencils again used, but after continuing for four weeks and no

Note.—I have recently operated for congenital contraction of the meatus, in a child ten years old, where the circumference was two inches. After the operation 22*f* was passed easily through the urethra.

*3¼ inches indicates urethral calibre 32*f*.
3½ " " " " 34*f*.
3¾ " " " " 36*f*.
4 " " " " 38*f*.
4½ " " " " 40*f*.

improvement, patient was put to bed, and hot hip-baths every two hours, etc.

After five weeks of this treatment, and various other, local and general, he came from his bed to me. December 1st, 1872. On examination I found no difficulty in introducing No. 20*f* bulbous sound, and discovered a firm cartilaginous stricture, extending from just within the meatus one-half inch back. This I cut freely with Civiale. Immediately following the operation, he expressed himself as feeling "like a new man." In his written report of the case (he was a physician), he stated that "on the division of the stricture the relief *was wonderful.*" The discharge ceased within twenty-four hours, the perineal pain and frequency of micturition, and the ardor urinæ also ceased, and he returned to his duties, which were most active, on the following day (after having been laid up for over five months), and has continued on duty up to the present date, although he still suffers occasionally from prostatic pain. The prostate, which I found double its normal dimensions on his first visit, is now found to be reduced in size fully one-third.

Case 6.—Mr. B., aged forty, from early boyhood has had more or less irritation of the urethra, usually referred to the vicinity of the meatus urinarius. Twelve years since had an attack of gonorrhœa, which continued for nearly a year, in spite of a variety of treatment. Suffered much during this attack, especially with pain in the glans penis. After a continence of several months, on having a sexual intercourse, found the act of seminal emission was accompanied by an intense burning pain, extending through the perineum and lasting for half an hour, described like red-hot lava running over a raw surface. On subsequent similar occasions, finding the same result, his physician, being consulted, called it a sexual weakness, and treated him by introduction of bougies. This failing to afford relief, he eschewed sexual indulgence entirely. Occasional nocturnal emissions were accompanied and followed by the same pain previously referred to, but less severe than in connection. In June, 1873, after seven years of continence, he noticed a

slight gleety discharge from his urethra, with pain in the glans penis, aggravated by motion, walking or riding. After a variety of opinions by various surgeons, as to the nature of his complaint, it was finally decided to be a stricture of the urethra and was treated by the semi-weekly introduction of bougies. His stricture was supposed to be in the deep portion of the canal, and after six months of treatment, his urethra was said to have been raised in calibre from 8 to 11 E. He then had an attack of acute cystitis, lasting two or three weeks, and since that time he has been subject to frequent trouble in micturition, frequency, and pain along the urethra, especially at the glans penis, and "*a feeling of wetness*," as the patient describes it, "that is depressing in the extreme." Has also had weekly seminal emissions. Examination in this case showed full development of penis. 26*f*, defines stricture $\frac{1}{3}$ of an inch from the meatus. Examination of bladder fails to detect any calculus. No evidence of contraction at any other point in the urethra with No. 21*f* bulb. I divided the stricture at the meatus, and passed 30*f* solid steel sound, *easily down through the urethra and into the bladder*. This was in July, 1873. The operation was followed by immediate relief of pain and frequency of micturition. The discharge soon ceased, a gradual improvement took place in regard to the pain after emission, for several months, when it began to return, and also some of his vesical irritation. Examination revealed a recontraction of the stricture. This was again divided, and a few days ago the patient wrote me that he has done well since the last operation, (which was performed in November,) and is entirely relieved of all his most troublesome difficulties, but an occasional feeling of irritation in the perineal region induces him to think that slight recontraction may have again recurred, and he proposed to return, at some convenient time, for examination upon this point.

Case 7.—Mr. S., aged forty-five, has had gonorrhœa twice, followed each time by a gleet lasting many months, finally cured by introduction of steel sounds. Has had several attacks of irritability of the bladder since first attack of gonorrhœa,

and long ago noticed that this was affected by the use of any alcoholic stimulant, and also that he did not completely empty his urethra after micturition. To effect this, he was in the habit of pressing his finger along the urethra from the perineum ; unless he did this, a sense of irritation in the canal, and a desire to urinate, would come on in a few moments. Complained of feebleness in making water after a week or two of continence. On having connection, the stream is at once greatly improved. Any sexual excess is followed by pain in the perineum. His trouble was now thought to depend upon spasmodic stricture, and large sounds advised. In order to admit them it became necessary to incise the meatus ; this done, 18E. was easily introduced, but not continued as contemplated, as all trouble passed off in a few days. A few months subsequently, however, his old troubles returned, and were not relieved by the use of the sound. At this point he came under my care. Penis found to be four inches in circumference, which would indicate a capacity of urethra of 38 of the French scale. No. 28 bulbous sound detects contraction at the meatus. This was freely divided, with the immediate result of relieving the irritation of the bladder, and in a short time pain following connection had almost entirely disappeared and the stream of urine was increased in force, and the ability to empty the canal much improved. The patient is still under observation.

Case 8.—Mr. Z., aged forty-six. Regular and chaste in habits until going to China, twenty years since. Following the custom of foreigners in that country, he indulged excessively in sexual intercourse for several years. Had a single attack of gonorrhœa, from which he recovered completely in a few weeks.

For the last few months he has been troubled with involuntary emissions as frequently as once a week, and, latterly, in his attempts at sexual intercourse, he has failed, on account of the seminal discharge having occurred before the erection was complete. He feels quite certain that his genital apparatus is less in size than formerly. Examination shows penis of normal size, three inches in circumference and three in length; some enlargement of the left spermatic veins; testes soft, full

size, left largest: meatus urinarius contracted to 22*f*. On introduction of the bulbous sound through it, as it was quite unyieling, it required some slight pressure, and as it suddenly slipped into the fossa navicularis, a regular spasmodic retraction of the penis occurred at intervals of three or four seconds, (retraction about a quarter inch), and continuing during the half minute that the instrument was retained, and continuing with rhythmical regularity for three or four minutes after its withdrawal. This result of the introduction of the sound was repeated several times at that sitting, the intervals between the contractions gradually lengthening, until an interval of five or six seconds occurred, when it ceased. These movements, so evidently of reflex origin, suggested the dependence of his seminal troubles on the same cause. I therefore divided the meatus thoroughly, and introduced thirty-one sound without difficulty through the urethra. After the operation, the introduction of the thirty-one bulb failed to excite the spasmodic contraction of the penis, nor in frequent subsequent experiments was I able to reproduce this phenomenon.

An immediate improvement in the general condition of the patient occurred. His involuntary emissions ceased without other treatment, and six weeks after the operation he informed me that he had entirely recovered his sexual powers.

Case 9.—I. W., aged thirty-four, came to me in September, 1873, complaining of frequent seminal emissions, one or two every week, pains in the lower part of the back, in the hypogastric region, in the groins, running into the testicles and extending down the inner aspect of the thighs to the knees. He was of chaste habits up to some four or five months previous, when he became engaged to be married. After this time he was the subject of frequent and prolonged venereal excitement and ungratified desire. In a few weeks involuntary emissions became frequent and finally painful, with suffering for some time after. Gradually the previously described pains of the back, hypogastrium, groins, testicles, etc., came on, resisting all treatment by his family physician until the present time. I prescribed for him absolute abstinence from sexual contact,

general care of diet, position in sleep, cold ablutions, etc., and a mixture of bromide of potassium, with the bromide of ammonium and tincture of ergot. December 2d, three months after, (living several hundred miles distant), he came again to see me, with the report of an entire relief from the seminal emissions, but had had swelling of testicles, and still suffers from almost constant pain in the back, over pubes, in the groins, and especially of late, in the testicles, extending down the thighs. Examination revealed a serous effusion into the *tunica vaginalis* of both sides: in the left some three or four drams of fluid: in the right rather more, and which backed well up to the external abdominal ring. The light test showed this fluid to be quite transparent. I at first thought of treating it as an ordinary hydrocele, by withdrawing the fluid; but on finding a meatus, situated on the superior aspect of the glans, contracted to 15*f*, and holding the bulb for fully $\frac{1}{3}$ of an inch, and further, finding that he had long been troubled with dribbling after micturition, I explained to the patient the possibility of all his trouble arising from this congenital deformity. He promptly consented to an operation, and I divided the contraction thoroughly, passing afterwards a thirty-four steel sound through the urethra. (Circumference of penis three and a half inches). Several sensitive points were recognized by the patient during the passage of the sound, indicating a granular condition of the mucous membrane. Immediate relief of the pain in the testicles and down the thighs followed the operation. Within a month all trace of fluid in the *tunicæ vaginales* had disappeared; he had had a single nocturnal emission without pain, and with the exception of a feeling of nervous anxiety through the hypogastrium (which came on occasionally), and some pain in his back, after general fatigue, he was quite recovered from his troubles. No internal remedies were made use of subsequent to the operation.

Case 10.—Mr. De F., aged forty-three, came under my care in March, 1867, suffering from retention of urine following a debauch. As no great amount of urine was present in the bladder, I gave him mur. tr. ferri, advised a hot bath, and left him. On the following morning he expressed himself free from

any trouble, and declined an examination of the condition of his urethra. In December, 1871, he again presented, complaining of incontinence of urine. He was also suffering from intermittent fever (which I suspected was due to his urinary trouble.) Said he "made his water freely, but could not hold it." I found some accumulation in the bladder. As the patient lived out of town, I made no examination, but advised him to make arrangements to come in town on the following day for treatment.

He did not present again until November 30th, 1872, when he came with the statement that he had then lost all control of his urine, had had none for the past year. On the day previous, while riding, he noticed a swelling in the perineum, and "wished it looked after." Examination revealed a firm elevation on the left of the raphé, one and a half inches in diameter at the base, and about an inch in elevation, extending from just behind the anterior border of the anus, to the junction of the scrotum with the perineum; solid, resilient, and painless: no constitutional disturbance; temperature, 98½°. On examination of the urethra, expecting to find a deep, tight stricture, I was surprised to find myself able to pass No. 13*f* catheter into the bladder, and to draw off a full pint of fetid urine, although he had just urinated. During the day the swelling increased, and interfered with the calibre of the urethra, so that I could only pass a No. 1 catheter into the bladder, and that with difficulty. Attaching this to Dienlafoy's aspirator, I drew off a pint and a half of urine. This, on examination, was found to be free from any evidence of organic disease of the kidney.

I then incised the tumor down through the superficial perineal fascia, and gave exit to a thin layer of pus, in quantity about a drachm.

It was only on the fourteenth day after, (the swelling gradually subsiding), that urine was found flowing through the wound. In the mean time, the patient suffering from cystitis, his bladder was washed out with a double-channeled catheter, No. 20*f*, which was passed without difficulty, although a

perceptible clinging was recognized near the meatus. His bladder trouble increasing so that he made his water every hour, and was loaded with pus. I urged an operation on the stricture, which, from the easy passage of the catheter, I had not before considered of much importance. Introducing bulbous sound No. 20*f*, I could not detect any stricture; on its withdrawal it was arrested at a point half an inch from the meatus, incising the stricture with the dilating urethrotome, which (No. 23*f*) I introduced with some difficulty, I then passed No. 30 sound, without obstruction, down into the bladder. On the following day I found that the frequency of evacuation of the urine had decreased from *one* hour to *six* between the acts; that the purulence had decreased, and that much less urine flowed through the opening in the perineum. From that time the patient continued to improve; his control of the flow of urine was restored; the purulence gradually disappeared, and within a week his perineal incision had healed, and he left for his home apparently well, not having had any treatment whatever, since the healing of the wound at the point of stricture. Circumference of penis in this case three inches.

Case 11.—Feb. 12th, 1872, Mr. A., aged fifty, came under my care, through the courtesy of a professional friend, with the statement that he had been suffering from chronic irritation of the bladder, accompanied by a slight urethral discharge, more or less troublesome, for a period of five years.

He was thought by his physicians to be the subject of "gravel," and for a long time had been much treated, and was finally sent abroad, in the hope that entire change of habit and climate might afford relief. He returned somewhat benefited. Soon after (about three months previous to his visit to me), subsequent to a season of prolonged exertion, physical and mental, acute irritation of the bladder recurred, with re-establishment of the urethral discharge, the latter quite like a gonorrhœa, and was treated as such, although he had lived in the odor of marital sanctity for more than twenty years. Anti-blennorrhagics were administered with no benefit. Injections afforded only temporary relief.

The patient presented to me in usual general health, digestion good. He gave a history of an attack of gonorrhœa twenty-five years previous, which was treated solely by internal remedies. A profuse muco-purulent discharge was present. On urination the stream was irregular and contracted. Meatus of average size, and admitted No. 18*f* bulbous sound: this was passed slowly and with some pain for half an inch, when it suddenly slipped into a capacious urethra beyond. On withdrawal, it was firmly held at half an inch from the meatus. On the same day I incised the stricture freely with Civiale's bistourie cache and passed No. 26*f*. and sent him home with directions to his professional attendant to have dilatation practiced daily until healing of the wound was complete. Returning July 3d, he reported himself as having had entire relief from his bladder trouble, and from the discharge, since the healing of the incision. For a few days previously, however, he had suffered with some vesical irritation. Examination revealed some contraction still remaining on the site of the stricture; this I at once relieved by the use of the dilating urethrotome, and passed 30*f* down into the bladder.

Case 12.—T. W., aged thirty-five, had gonorrhœa fifteen years ago; has had it several times since. The last time, four years ago, coming on forty-eight hours from date of exposure. After the discharge had existed ten or twelve days, he states that he "stopped it with a powerful quack injection." Three or four days subsequent to this he began to suffer with a neuralgic pain in the left testicle, the scrotum became tender and red, testicles moved up and down alternately much of the time, and the penis was greatly contracted; there was likewise pain in the groins, described as drawing and sickening, which extended down into his knees and the bottoms of his feet. This continued with varying severity almost without cessation up to Feb. 22d, when he came to New York for treatment, and fell into the hands of an endoscopist, who discovered numerous granular spots deep in his urethra. Applications made at regular intervals for about three months without benefit. An application of carbolic acid to the scrotum gave some relief to

his nervous feelings, but this caused vesication, and the relief was but temporary. About May 1st he sought the advice of a surgeon skilled in genito-urinary diseases. Slight stricture was discovered near the meatus, and several indurated points farther down. 28/ solid steel sound was introduced, and after some repetition during one month was given to the patient to be regularly used once in three days until his troubles ceased.

Went back to his home, some eight hundred miles distant, and pursued the plan laid out for him, but received no benefit. The motion of his testicles was almost constant, and the nervous feelings this induced drove him almost frantic—compared with it the pains in his groins, knees, and feet were a positive relief. He became very low-spirited and despondent. Early in October his physician (who had accidentally met with an article of mine in the second number of Dr. Brown-Sequard's Archives on "Reflex Irritations of the Genito-Urinary Apparatus, resulting from Stricture") advised him to return to New York and put himself under my care. Examination discovered a penis of normal size, three inches in circumference; scrotum greatly relaxed and covered with eczematous scales produced by the carbolic acid; testicles hanging very low. My attention was at once drawn by the patient to the rhythmical contraction of the cremaster muscles, through which a see-saw motion of the testicles was kept up, and which constituted his chief annoyance. 30/ bulbous sound passed the meatus, but was arrested at one-half inch, a point to which his greatest sensitiveness during passage of instruments had always been referred. 28/ passes through and detects another stricture at two inches, and still another at two and a half.

On Friday, Oct. 17th, at my invitation, the patient was examined by Dr. Coldham, of Toledo, Dr. J. DeForrest Woodruff and Dr. Frank Howe, of New York, especially in reference to the spasmodic action of the cremasters. This was very marked and constant, and continued until the patient was placed under the influence of ether by Dr. Howe; I then demonstrated the size and locality of the strictures before mentioned, and divided them in succession with the (my)

large dilating urethrotome, after which I passed with ease a 30*f* steel sound through all and into the bladder. As the patient emerged from the influence of the ether, it was observed that there was no longer any of the spasmodic action of the cremasters. When he became conscious, he stated that he already felt less of his nervous feelings than for many months. He was "certain that the right chord had been struck."

Oct. 8th. Improvement continues—no return of spasmodic motion.

October 20th. Examination with 30*f* bulb shows a slight clinging at ¼ inch from the external orifice. Cut this at once, and freely, with straight bistoury, and pass 31*f*. The patient on the following day expressed his belief that a complete cure had been effected ; that since the final division of the meatus he had not had the slightest return of the abnormal sensations and pain with which he had, in some degree, constantly suffered for the previous four years. Daily introduction of the bulb was kept up, in this case, until all bleeding ceased, when the patient was dismissed with the promise on his part to inform me by post if he had any return of his trouble.

Case 13.—Mr. H. D., aged fifty-one, had been under my professional care for several years ; suffered from renal colic on two occasions ; once in 1869, and again in 1871. Was not conscious of having passed any stone through the urethra. Came to me in February, 1872, complaining of a sense of irritation at the *glans penis*, and a frequent desire to urinate. Careful exploration of the bladder failed to discover any calculus, but the *meatus urinarius* was red and tender, and contracted to 20*f*. This contraction was at once divided freely, size not noted. The relief from the irritation was immediate and complete. In May, 1873, Mr. D. called, stating that his old irritation had returned. Examination showed that the meatus has recontracted to 23. This was again divided, with relief equally prompt as on the first occasion ; but in the subsequent daily introduction of a glass tube, size 30*f*, an unnecessary degree of violence was used by the patient, setting up an inflammation, which extended back as far as the

prostate, and threatened to culminate in an abscess of that organ. This inflammation was accompanied by a discharge which did not differ from an ordinary gonorrhœa in the declining stage. After two months of treatment the discharge still continued, with more or less irritation of the vesical neck. Meatus recontracted to 24. Again cut to 30*f*. This operation was followed by immediate relief from the vesical irritation. The discharge ceased without other treatment, and up to January, 1874, the cure has remained permanent.

Case 14.—Mr. M., aged twenty-seven, had a history of seminal weakness, following self-indulgence from fourteen to seventeen. Has never had venereal disease. Began to notice a lack of virility a year ago. Seminal emissions weekly. Erections imperfect. Frequent desire to urinate, which is promptly relieved by tr. ferri. mur. ; but this soon causes constipation (in spite of anything short of brisk cathartics), and increased seminal discharges result. Has a constant and annoying sense of wetness about the glans. Always dribbles in his clothes after urination. Microscopic examination of urine shows nothing abnormal but a few shreds of mucous. Prescribed mixture of bromid. potass. and bromid. ammonium, which arrested seminal emissions for a full month. He returned in better spirits. Has much less sexual desire than formerly, and occasional imperfect erections. Has not been obliged to urinate more than three or four times a day since taking the bromides. When he came to me he described the desire to urinate as *unceasing*. After a month, he returned with some measure of his urinary irritation, although still taking the bromides. Great annoyance at the dribbling after urination, and says that the constant sense of *wetness* is depressing to the last degree. Examine meatus critically. 30*f* passes, but hugs slightly on return ; 31 will not pass. Size of flaccid organ 3½ inches in length, and 4 in circumference. From this I estimate the normal calibre of the urethra at 38*f* at least. As the dribbling seemed to indicate some retention at meatus, I concluded to divide it freely. This was done, without pain, under the influence of local anæsthesia, when bulbous sound No. 38*f* was

passed with ease, through the length of the urethra, detecting several small sensitive granular points in its course. The relief from the dribbling in this case was immediate and complete, and the *sense of wetness* (as the patient always expressed it), which gave him so much annoyance, was completely removed. Although taking no internal remedies he has had no return of emissions; the irritation of the bladder also disappeared, and up to the present, one month from the date of operation, it has not returned. In this case the difference between 30*f*, which measured the size of the evidently contracted and unresilient meatus, and 38*f*, which was easily passed after division of the stricture, viz.: six millimeters, shows the extent of the contraction.

Case 15.—A. W., aged twenty-seven, seventeen years ago had first attack of gonorrhœa. Afraid and ashamed to speak of it, he suffered greatly for four or five months without any treatment whatever. Has had several attacks since, which were treated solely with injections. About six months ago had an attack of sub-acute prostatitis, which caused him much pain, both in urination and in defecation. This lasted several weeks. Since that time he has had desire to urinate more frequently than natural—several times during the day, and also disturbed frequently at night. For the last five days he has been obliged to pass water almost every hour during the day, and at least every hour during the night, suffering great pain in the perineum, also in the rectum, at each act of micturition. He has, besides, a constant desire to defecate. Jan. 10th, 1874, examination, per rectum, reveals a tender and enlarged prostate fully double the normal size. External genital organs normal, except the *meatus urinarius*, which was contracted to 20. Circumference of penis three and one-fourth inches. On passage of 20 bulbous sound, a distinct, unyielding fibrous ring was detected, which held the bulb firmly at one-fourth inch on its return. 19 detects second stricture at one inch, and a third at one and three-fourths.

For the patient's immediate relief, half a dozen Swedish leeches were ordered to be applied to the perineum at the an-

terior border of the anus. Morphia suppositories every four hours. Under this treatment, with rest in bed, the rectal discomfort abated. Frequency of micturition, with pain in the perineum and rectum, remained without much amelioration until Jan. 16th; on this date the patient was etherized, and with the assistance of Dr. Beach Jones and Dr. Wiesfelder I first divided the stricture at the meatus freely with Civiale's *bistoury cache*; then, introducing the small dilating urethrotome, I dilated to 30*f*, and cut the second stricture at one inch; readjusted, and cut the third at one and three-fourths, after which 31 steel sound was passed readily into the bladder.

The relief from pain and irritation in the rectum and at the neck of the bladder followed the operation almost immediately. By the following day the desire to urinate was reduced to the normal standard, and the patient was disturbed only once during the night. Feb. 10th, twenty-six days after the operation, he reports himself as having had no further trouble, and as passing his water two or three times during the day and once at night. Examination per rectum shows the prostate free from tenderness, but fully double its normal size. 31 steel sound passes through the urethra without the slightest trouble.

Case 16.—Mr. X., aged fifty-four, seen in consultation with Dr. Ives, his family attendant. Had a history of first gonorrhœa twenty-eight years previous; severe, lasting two months. Second attack eight years ago; not severe, subsiding entirely in ten or twelve days under the use of injections of acetate of lead alone. Three years ago he began to be troubled with frequent micturition during the day and four or five times at night, associated with pain extending from the end of the penis to the neck of the bladder, also pain in the testicles and perineum, and extending down the thighs. Water occasionally stopped, and required to be drawn off with a fine catheter. Was taught to do this himself, and has often required relief in that way. About the first of August last, after using the catheter, he discovered a small bit of gravel in the eye of the instrument. Since that time he has voided a large quantity of the same sort, with fine whitish sand, mucus, pus and blood.

Was under the care of a prominent surgeon in Brooklyn last summer, who, after careful examination, assured the patient that he had no stone in the bladder. This surgeon treated him at first by frequent washings out of the bladder: afterwards he used the galvanic current, with one pole in the bladder and one on the back. This was continued *daily* (?) for six weeks, but no improvement was manifest, and as the patient was much debilitated he was sent into the country to recruit. Since that time he has had no treatment except the use of Lee's lithontriptic pills, and the use of the catheter when required by attacks of retention of urine.

Nov. 24th, 1873. Present condition: is in feeble general health. Has an expression of great and constant pain, is very restless and moans frequently, although evidently attempting control; skin pale and yellow; says his weight is 130; weight formerly 160. Genital apparatus well developed. Right testicle invaded inferiorly by a mass of fibrous feel, involving one-half the body of that organ. Left much the same, but softer. Passes urine in my presence in a small, divided, uncertain stream. Urine of strong, stale odor, thick and muddy in appearance. Coagulum under heat, which is not dissolved by nitric acid. Cursory microscopic examination shows cells of pus and blood. Epitheleum from urethra, bladder and pelves of kidneys, but no casts. Meatus urinarius apparently normal. 29 bulbous sound passes to the depth of one-third of an inch: it is, however, abruptly arrested at this point, and only 20*f* will pass. This (No. 20) found no farther obstruction in the deeper portion of the canal, but on return was firmly held at three-fourths of an inch, thus defining a stricture more than one-third of an inch in breadth. Visiting the residence of Mr. X. Nov. 26th, he was found walking the floor with constant moans, begging to have the operation done at once to relieve his agony. Assisted by Dr. Ives, the patient was promptly anæsthetized. The stricture near the meatus was then thoroughly divided, and No. 30*f* bulbous sound passed through to one inch—here it was abruptly arrested. 24*f* only would pass, and was held firmly on return at one and one-third inches. I

then introduced the dilating urethrotome, turned up to 30*f* and cut. 30*f* bulb was passed down to two inches, where it was again arrested. 28*f* only will pass, and on withdrawal is held at two and one-fourth inches. Re-adjusting the urethrotome this band was also divided, when 31*f* steel sound was passed without force through the entire urethra. Ferguson's short-beaked sound was then introduced into the bladder and thorough search made for stone, but without success. Hemorrhage slight, ceasing entirely within fifteen minutes after the operation. Dr. Ives remains in charge.

Nov. 29th, three days subsequent to the operation, Dr. Ives called, reporting that the patient had no pain of any kind following the operation, up to his visit of yesterday. Under the influence of ten grains of quinine and a quarter grain of morphia he had slept for six hours, and on waking passed water with freedom, with slight smarting but no pain. After this the intervals between the acts of micturition averaged about four hours. Passed the steel sound 31 with ease. Purulence in the urine greatly decreased.

Dec. 16th. Dr. Ives reports Mr. X. as having suffered for a day or two past with pain in the penis. Purulence in the urine has entirely disappeared. 30 steel sound drops through the urethra into the bladder by its own weight. The possibility of slight recontraction of the stricture at the meatus as cause of trouble was suggested.

Dec. 23d. Mr. X. called with Dr. Ives. He reports, personally, that while he passed his water every half hour with great straining and pain before the operation, that since then he has not been called to urinate oftener than once in three or four hours, up to within a week since, when it has been once in two hours. All the pains in the back and lower part of the abdomen, in the testicles and extending down the thighs, passed off entirely within a few days after the operation. During the last ten days he has had pain referred to in the vicinity of the prostate, when urinating, and the stream has been small and weak. Could void it only by straining. He had himself passed 30*f* steel sound the day previous.

Examination of the prostate, per rectum, reveals no enlargement or tenderness. 30/ sound passes without difficulty into the bladder, except a little hugging near the meatus. 29/ bulb is arrested at $\frac{1}{4}$ inch, and holds on return at $\frac{3}{4}$. I introduced a straight bistoury, and cut through the contraction, so that No. 34/ bulb passed in and out without obstruction, to keep this well open until healing is complete.

Case 17.—October 9th, 1873, I was called to see a gentleman aged sixty-four, whose general health had always been good: he had lived generously, but regularly. He stated that for the ten years previous he had occasion to urinate on an average every hour during the day, and through the night even more frequently; for the previous six months he was confident that he had micturated every half hour, unless some necessity prevented, when he always suffered from the delay. At no other time had he any pain; the frequency of micturition was simply an inconvenience. He stated that he had never had any gonorrhœal trouble. Several years previously he had consulted an eminent surgeon, in regard to his urinary trouble, and was said to have "stricture just beyond the middle of the penis." For this he was treated by the occasional introduction of bougies for a couple of months, at the end of which time no benefit being apparent, he ceased bestowing any attention to the matter. About three months ago, he began to notice a creamy sediment in the urine, which would cling to the floor of the *pot de chambre*. It was not, however, until about three weeks ago that he began to suffer actual pain, and straining on passing his water. To this was soon added pain *in the testicles, through the hypogastrium, and also in the perineum, and extending down the inner aspect of the thighs to the knees.* The stream of urine was subject to frequent sudden arrest, and the straining which followed was severely painful, and pain extended throughout the regions previously mentioned. The urine soon became of a deep reddish brown color, with occasional strings of blood and mucous mixed with the copious creamy sediment, which was now persistently deposited. Notwithstanding all this, he continued to ride daily, a distance of

some three miles, to his office. About a week since, finding the motion of his carriage greatly aggravating his pains, he consulted an eminent medical personal friend of his, who informed him that he had a grave cystitis, and commended him to my care. I found him sitting upon a hop poultice, which had been prescribed for him by his wife's medical attendant, (a homeopath), and ascertained that he had been taking frequent doses of a homeopathic preparation of belladonna.

Present condition: Constitutional disturbance very slight, pulse 80*f*, temperature 99¾. Inspection of urine in the *pot de chambre*, (which was about ⅓ filled, and had been standing for several hours, showed a deposit of mucous and pus, stained and streaked with blood, fully 1½ inches in depth. Examination per rectum determined the prostate to be of even less than the normal size, and free from tenderness.

The introduction of Ferguson's short beaked sound (No. 20*f*), into the bladder, was effected with great gentleness, but with ease, and without meeting with any abnormal impediment in its passage. The bladder was then thoroughly explored for calculus, but with a negative result. Confident, at first, from the history and condition of the case, that it would prove to be one of stone in the bladder, I had, thus far, only cursorily examined the meatus urinarius. Ferguson's sound No. 20*f* had passed through it easily. 22*f* and 23*f* bulbous sound were now passed with ease, but 24*f* was held at ⅓ of an inch. After slight pressure for a few seconds it slipped suddenly through a ring of fibrous tissue, and passed, without obstruction, down to the bulbo membranous junction. The patient was then put upon a free use of infusion of triticum repens, and suppositories of belladonna and hyoscyamus every six hours.

A subsequent microscopical examination of the urine showed pus and blood in abundance, some urethral and vesical epitheleum, none from the ureters or pelves of the kidneys, no casts. Albumen slight; specific gravity 10.20.

On suggesting to the patient that division of the strictured meatus was likely to be a necessity before much relief would occur, he desired that his friend, Dr. J. Marion Sims, should be called in consultation.

On Thursday, the 14th, after an exhaustive consideration of the case, Dr. Sims coincided with me as to the possibility, nay (in the absence of calculus and prostatic disease), of the probability that the well-defined contraction at the meatus was the original cause of the cystitis, and might be justly held responsible for its continuance. The operation was at once decided upon, and the patient placed under the influence of ether by Dr. Harry Sims. I then thoroughly divided the contraction—first by the use of *Civiale's Bistoury Cache:* completing the division of some remaining elastic fibres with a straight blunt bistoury, until the opening admitted bulbous sound 31. This was then carried easily down to the membranous urethra, without discovery of any farther obstruction. The bladder was again thoroughly explored for calculus by both Dr. Sims and myself. It was found to be much contracted and thickened, but contained no stone.

On the 15th—the day following the operation—I ascertained that, since the division of the contraction, our patient had not had the necessity of passing his water more than once in two hours, and that the pains in the testicles, the hypogastrium, the perineum, and down the thighs, which had previously been his chief points of suffering, had *entirely disappeared.* There was manifestly less blood in the urine. By the 16th the pus had diminished one-half in quantity, the blood had entirely disappeared, and the intervals between the acts of urination had increased to two hours and a half. From this date the only treatment to which the patient was subjected was the daily introduction through the meatus, into and not beyond the fossæ navicularis, of a No. 31 bulbous sound. By the 26th —twelve days from the date of operation—the purulent sediment in the urine had entirely disappeared; riding or walking no longer gave him discomfort, and he had resumed his business. The intervals between acts of urination now vary from two to three hours. There is an occasional occurrence of spasm during the act, which causes the sudden stoppage of the stream, and the urine is voided slowly, and with but little more force than before the operation, but he is not conscious of

any other abnormality remaining. He expresses himself as feeling and being in better condition than for years. A few days subsequent to this interview with the patient, he went abroad, to remain during the winter, and I have not since heard from him.

Case 19.—Aaron, aged sixty-eight. History of a first gonorrhœa at twenty-one. Married at twenty-seven, had seven children, and no trouble with genito-urinary apparatus until four years ago, when he contracted another gonorrhœa. This, after a month, subsided into a gleet, and to this, in about three months after, catarrhal cystitis was added. The cystitis resisted every treatment, and has continued, in a greater or less degree of severity, up to the present time. About a year since he began to suffer with neuralgic pains in the groins and in the perineum, and he experienced a very uneasy sensation in his testicles, one of which became considerably enlarged.

Nov. 26, 1874, penis only 2 inches in length, flaccid, $3\frac{1}{4}$ in circumference. Meatus 18/. Left testicle half usual size, right normal, but with a greatly enlarged and soft epididymis, almost entirely covering in the glandular structure, and forming a swelling above it as large as a madeira nut, and described as the seat of long standing and very troublesome irritation. Some muco-purulent secretion from urethra. Has been treated for some time by use of soft bougies, with pain and no relief. Complains of pains in back and groins, extending down along inner aspect of thighs. Urination every half hour, day and night. Freshly voided urine loaded with pus and mucous. Reaction alkaline. Strong urinaceous odor. No renal epithelium or casts. Albumen slight. Is uneasy and restless in manner, and full of anxiety—quite like a confirmed hypochondriac. Examination with 18/ bulbous sound detects a stricture at the meatus, extending back for half an inch, after which it slips down the urethra without giving evidence of any farther obstruction.

Dec. 22d. Saw the patient in consultation with Dr. Willard Parker. Division of the stricture at meatus agreed upon. Ether administered by Dr. Chas. Turnbull. The stricture at

the meatus was first divided. Dense cicatricial tissue, extending for fully one-half inch. Bulbous sound 32*f* was then passed to two and three-fourth inches, when it was arrested by a second stricture. 29*f* defined its calibre. The dilating urethrotome was then introduced, turned to 34, and the stricture divided. 31 solid steel sound then passed without obstruction through into the bladder. Relief to the neuralgic pains followed the operation almost immediately. Within forty-eight hours the intervals between acts of micturition had increased from one-half hour to four or five hours. Purulence in urine greatly decreased. Irritation in the scrotum ceased, swelling of epididymus gradually went down, and the patient made a complete recovery, without other treatment *within four weeks*.

In the foregoing cases, presenting features more or less grave in their conditions and consequences, a point of significant interest is common to all, viz., an abnormal contraction at or near the meatus urinarius; the well determined sequel in the majority of instances of antecedent inflammatory action. Abnormal spasmodic muscular action plays a prominent part in every case. Spasm of the urethral walls; of the accelerator urinal muscles; of the cremasters; of the vesical neck, and of the seminal ducts, etc. Spasm, as in Case 10, so firm and persistent that the urethral walls finally gave way behind it. Spasm that for months resisted the introduction of the smallest instrument, as in Case 3. Spasm so persistent that the bladder was not allowed to completely empty itself for years, (as in Cases 17, 18 and 19,) and thus producing the chronic catarrh, which finally became so grave an element in these cases. Spasm, as in Case 12, where the testicles played at see-saw for nearly three years, and until the poor wretch who owned them was driven to the verge of suicide.

Some one or several of these conditions appear as a persistent feature in each. Spasm, a well recognized result of irritation is equally significant of debility. Most of the cases, if not all, were subjects of sexual excess; irritation supervening upon nervous debility, spasm naturally results. Irritations which are known to give rise to reflex disturbance are *not of necessity*

painful irritations, or which by any special sensation invite attention at once to the source of trouble. Dr. Hanfield Jones (in his work on Functional Nervous Disorders, page 704), says: "It seems to be well ascertained that *unfelt* irritation may give rise to very various morbid phenomena, affecting both the motor and sensory nervous organs Dr. Brown-Sequard maintains that various forms of insanity, of vertigo, chorea, hysteria, tetanus, etc., may be due to irritations, starting from a centripetal nerve, and frequently *slightly* felt or *unfelt*: and that the suppression of these irritations may promptly cure the patient." He cites a case where a married lady suffered for a considerable time with a uterine neuralgia, which ceased completely on the extraction of a tooth that had not caused any considerable annoyance.

In the excellent little *brochure* on Stricture of the Urethra, by Samuel R. Wilmot, London, he says: "It is easy to conceive with what ease morbid irritation in the urethra may elude detection, and which, though slight, may be capable of exciting perfect reflex action, particularly in systems of high nervous mobility, and, where the slightest irritation exists within the urethra, the mere influence of the mind, derangement of the digestive organs, and various other remote causes will lead to spasm." What, then, in these cases of evident reflex nervous trouble, is suggested as the cause of the irritation? Division of a contracted meatus, as has been shown, relieves the reflex disturbance; and yet, simple contraction of the meatus cannot be sufficient to produce such morbid nervous actions as cited; for it is well known that congenital contractions at this point are frequent, and yet no irritation ensues. In congenital contractions, however, the muscular surroundings of the urethral orifice are in a normally supple condition, and able efficiently to play their part in completely emptying the urethra after micturition. Let this delicate muscular structure become infiltrated with plastic material, and the complete discharge of the last drops of urine, through its action, is rendered impossible. A *dribbling* after the act is the necessary consequence, and this is also an *unvarying*

feature in all the foregoing cases. It is this inevitable retention of a few drops of urine which I believe to be the starting-point of the irritation. As time goes on, and the resulting plastic exudation becomes organized, cicatricial tissue forming and necessarily condensing, a permanent contraction results, which adds to the muscular inefficiency, especially when it occurs in an orifice congenitally insufficient. It is this condition which often prolongs a gonorrhœa, and is the most fruitful source of chronic urethral discharge following a gonorrhœa. That the retained urine causes the irritation, I am led to believe still farther, inasmuch as behind structures at the meatus, granular spots of inflammation occur, sometimes extending throughout the urethra, and on relief of the stricture, promptly disappear without other treatment, as in the third case cited. I have seen many such. Local points of tenderness were present in almost, if not quite all the cases of reflex urethral irritation that I have met.

Then, as the urethral orifice becomes permanently contracted and unyielding, a distinct and sudden *arrest* of the stream of urine repeatedly occurs during the forcible acts of urination. Is it too much to believe that the force of this blow at the point of arrest will add to the irritation, and that the effect of its recoil should be felt, back, even to the vesical neck? It seems to me that this may, after long years of such constant irritating influence, prove an important element in disturbing the harmonious action of the complex sensory, motor and sympathetic nerve distribution, in the deeper parts of the urethra.

Considering the force and persistence of the spasm in certain cases, the idea of its *tetanic* nature has suggested itself: induced by pressure and irritation of the nerves of the glans, in the cicatricial contraction. The treatment of the contractions by complete division, resulting in prompt and notable relief in all the cases, is equally suggestive of simple mechanical obstruction, urinary retention, or cicatricial irritation. To be effectual, however, the division must be absolute and entire. It is not sufficient that the meatus be enlarged up to the nor-

mal urethral calibre. The incision must reach down *through all cicatricial tissue*, and so completely that the largest sized bulbous sound which can be passed through the opening, shall pass in, and return, *without the slightest sense of resistance*. If it is less than this the contraction is absolutely certain to return, within a few weeks, often within a few days, in spite even of every possible effort to keep the parts dilated. Once, however, the stricture tissue is completely divided, it is then only requisite that the edges of the wound be kept asunder by the occasional introduction of a sound, until granulation is established throughout its extent. After this (if no new inflammatory action is set up), not only will no recontraction take place, but the old abnormal fibrous material will in time become wholly absorbed. This important statement, applying virtually to all strictures of the urethra, wherever located, I do not make without the ability to prove it by the results of this plan, as presenting in many cases thus treated, in over thirty of which, examination has been had at periods varying from two years and three months, to six months from the date of operation. During the last month I presented before the members of the New York Medical Journal and Library Association, a case where originally six urethral strictures were present (including one at the meatus) of a size of 24*f*. These strictures were operated on (completely divided) with the dilating urethrotome in January, 1871—more than two years previous. Examination with the bulbous sound No. 30*f*, in the hands of a committee (consisting of Prof. Alfred C. Post, Dr. James M. Miner, and Dr. J. DeForrest Woodruff) failed to detect the slightest stricture, either at the meatus or at any other point. In order to demonstrate the complete restoration of this urethra to its normal resilience, by gentle pressure, I introduced, in the presence of the members of the Journal Association, a bulbous sound 34 M. in circumference, through the meatus, and down to the bulbo-membranous junction.

DISCUSSION.

Prof. Alfred C. Post, after expressing his thanks for the very interesting and valuable paper presented by Dr. Otis, said there was a single point which had been made concerning which he had some personal knowledge, viz.: that one part of the body may be the seat of a painless affection, and yet cause distressing symptoms in some other part. Twenty years ago he suffered with a neuralgic affection for several days, when he discovered that a wisdom tooth was the offending cause. This removed, the pain was at once and entirely relieved. Afterward, on relating the case to a dentist, he remarked that it was nothing new, that he had often met with similar cases. Dr. Post had also met with several of incontinence of urine in children, associated with phymosis, and which, treated by removal of the prepuce, resulted in cure without other remedial means. He had not met with the class of cases referred to in the paper just read, but he considered them analogous to those above related by him.

Dr. Richards had observed the association of varied reflex phenomena with stricture of the œsophagus and trachea, and could not but be struck by the coincidence in the character of the troubles, with those described by Dr. Otis.

Prof. Detmold remarked that the facts presented by Prof. Otis were not surprising, if we stop a moment to consider that the sensitive point of all the tubes of the body is at the openings. Normally there was no sensation in the cavities. If there was stone in the bladder, the pain would be felt at the glans penis: and besides, the most sensitive region of the human body—that with which the entire individual most thoroughly sympathizes—is that of the sexual organs. In connection with the feeling of *wetness* which is alluded to in some of Dr. Otis'

cases, he had noticed that the feeling of cold was complained of by patients suffering from stricture and the resulting irritation, and was rather surprised that it was not mentioned among the cases related by Dr. Otis.

Dr. Otis remarked that he had not unfrequently met with cases suffering from seminal debility where the feeling of cold was complained of, but it was not present in any of the cases referred to.

Dr. J. G. Adams would like to ask if Dr. Otis had any faith in *dilatation* for the relief of such cases as he had described.

Dr. Otis replied that he had none. That complete division was the only remedy he had any confidence in. One of the most aggravated of the cases presented had been subjected to careful and persistent efforts at dilatation, the effect of which had only been to aggravate the troubles of the patient. He had, however, seen a number of cases where the difficulties had been temporarily relieved by a division which was not complete; these cases had occurred at his clinique, where the daily attendance necessary to prevent recontraction could not be secured.

Dr. Detmold stated that a patient of Dr. Otis', whose meatus had been divided for a slight stricture, had come to him for treatment, and that he was the subject of an intense and painful orchitis; that he had refused the case, and had sent him back to Dr. Otis' clinique. He would like to know if this was the result of the operation, and if cutting stricture at this point had ever brought about troubles elsewhere.

Dr. Otis said he would not attribute the orchitis to the incision; that if not the result of extending urethral disease, it was probably caused by the introduction of a sound through the curved portion of the urethra; that the simple division of stricture had never in his experience produced inflammatory trouble at any point, but that on several occasions the forcible attempts, by the patients, to keep the incision open, had resulted in inflammation of the glans, and in one instance had extended down the urethra, simulating an ordinary sub-acute urethritis, until it involved the prostate gland. It would have

been remarked that several of the cases of reflex irritation reported were associated with an enlarged and sensitive epididymis, and that these conditions, as in Prof. Parker's case, were relieved by dividing the stricture at the meatus.

Dr. Detmold remarked that in a certain proportion of strictures there was also enlarged epididymis; but in the case he had referred to it was not a chronic condition, but an acute inflammatory swelling of the body of the testicle. If Dr. Otis ascribes this condition to the dilatation, does he believe that dilatation after or before cutting the stricture will bring about an orchitis? It must have been the combination of the incision with the injudicious dilation, for he had never seen dilatation alone produce an orchitis.

Dr. Otis had had quite a different experience, and considered that the simple passage of an instrument through the urethra, (sound bougie or catheter) was capable of producing such an accident, and this, too, when the introduction had been effected in the gentlest and most judicious manner. Dr. Otis referred to two cases published by him, he believed, in the Medical *Record*, in July, 1871, when the introduction of a soft bougie through a deep, but not very close stricture, was followed in both instances by an inflammation which could be distinctly traced, by the sensations of the patients, as it gradually extended through the entire course of the vas deferens, terminating within forty-eight hours in an acute epididymitis.

Professor Fordyce Barker spoke of several cases that had come under his observation, where disease of the orifice of the female urethra had simulated uterine disease, and that he could readily understand the possibility of such results as had been described by Dr. Otis as resulting from contraction of the male urethral orifice.

Prof. A. Jacobi remarked that he had no experience in such cases as those described, but that he would say a word concerning some of the symptoms alluded to. First, that of the sensation of cold. He thought Dr. Detmold had stated that this symptom was associated with partial or complete impotence. In such cases we had the symptom of cold from partial

or complete paralysis of the vaso-motor nerves, and that in the cases related by Dr. Otis this symptom was necessarily absent, as the cases he cited were all those of nerve excitation, and not paresis. Then the feeling of wetness spoken of. There was no moisture in reality. The function of the urethra was to allow urine to pass; the brain identified this sensation with wetness. When the stomach is empty there is a feeling of hunger. When the mucous membrane is diseased, as in chronic catarrh, there is a feeling of hunger. In the same manner when we have trouble with the mucous membrane of the urethra we had the feeling of wetness.

Dr. Chamberlain spoke of a case which he had recently seen with Dr. Leaming, where a reflex irritation set up by a deep fissure of the anus had given rise to conditions which simulated locomotor ataxia, and which, on divulsion of the sphincter ani, was almost immediately and completely relieved from symptoms which had been said to indicate well pronounced sclerosis of the anterior column of the spinal cord.

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